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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/909,364	07/19/2001	Tun Sein Tan	10004141-1	3266
7590	06/23/2004		EXAMINER	
AGILENT TECHNOLOGIES, INC.			LI, SHI K	
Legal Department, DL429				
Intellectual Property Administration			ART UNIT	PAPER NUMBER
P.O. Box 7599			2633	
Loveland, CO 80537-0599			DATE MAILED: 06/23/2004	

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/909,364	TAN ET AL.	
Examiner	Art Unit		
Shi K. Li	2633		

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 19 July 2001.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-20 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-20 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 19 July 2001 is/are: a) accepted or b) objected to by the Examiner.

 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) Notice of Informal Patent Application (PTO-152)
6) Other: _____.

DETAILED ACTION

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 7 and 18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 7 depends on claim 1. Claim 1 recites in lines 5-6 the limitation "a polarizing beam splitter directly adjacent to said first output of said planar waveguide optical coupler" and claim 7 recites the limitation "a polarization rotator located between said planar waveguide optical coupler and said polarizing beam splitter". The specification recites in page 14, lines 8-10 "the planar waveguide optical coupler and polarization beam splitter are maintained directly adjacent to each other even though they are separated by the polarization rotator". However, the specification does not teach how to make such arrangement possible. The same rejection is applicable to claim 18 for the same reason.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 7 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 7 depends on claim 1. Claim 1 recites in lines 5-6 the limitation "a polarizing beam splitter directly adjacent to said first output of said planar waveguide optical coupler" and claim 7 recites the limitation "a polarization rotator located between said planar waveguide optical coupler and said polarizing beam splitter". It is unclear whether the PBS is directly adjacent to the coupler or there is a polarization rotator in between the PBS and the coupler. The same rejection is applicable to claim 18 for the same reason.

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claims 1-3 and 8-11 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 7 of U.S. Patent No. 6,256,103 in view of Tsunetsugu et al. (H. Tsunetsugu et al., "A Packaging Technique for an Optical 90°-Hybrid Balanced Receiver Using a Planar Lightwave Circuit", IEEE Transactions on Component, Packaging, and Manufacturing Technology – Part B, Vol. 19, No. 3, August 1996).

Claim 7 of patent '103 includes optical combining means (coupler) for combining first signal and swept local oscillator, a polarizing beam splitter, and a plurality of photodetectors. The difference between claim 7 of patent '103 and claims 1 and 8 of the instant application is that claim 7 of patent '103 does not require the polarizing beam splitter to be directly adjacent to the coupler. Tsunetsugu et al. teaches in FIG. 5 a package technique to assemble a receiver module by putting optical elements adjacent to each other without using fibers in between. One of ordinary skill in the art would have been motivated to combine the teaching of Tsunetsugu et al. with claim 7 of patent '103 because the package technique reduce size and simplifies the assembly process. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to assembly the coupler and polarizing beam splitter adjacent to each other to reduce space and simplify alignment, as taught by Tsunetsugu et al., in claim 7 of patent '103.

Regarding claims 2-3, Tsunetsugu et al. teaches in FIG. 5, FIG. 6, FIG. 7 and FIG. 13 to keep optical elements in contact and attach elements together.

Regarding claims 9-11, Tsunetsugu et al. teaches in FIG. 5, FIG. 6, FIG. 7 and FIG. 13 to keep optical elements in contact and attach elements together. It is well known to the art that elements can be bonded together as subassembly to mechanically secure their relative positions.

8. Claims 1-3 and 8-11 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 3 of U.S. Patent No. 6,259,529 in view of Tsunetsugu et al. (H. Tsunetsugu et al., "A Packaging Technique for an Optical 90°-Hybrid Balanced Receiver Using a Planar Lightwave Circuit", IEEE Transactions on Component, Packaging, and Manufacturing Technology – Part B, Vol. 19, No. 3, August 1996).

Claim 3 of patent '529 includes optical combining unit (coupler) for combining first signal and swept local oscillator, a polarizing beam splitter, and a plurality of photodetectors. The difference between claim 3 of patent '529 and claims 1 and 8 of the instant application is that claim 3 of patent '529 does not require the polarizing beam splitter to be directly adjacent to the coupler. Tsunetsugu et al. teaches in FIG. 5 a package technique to assemble a receiver module by putting optical elements adjacent to each other without using fibers in between. One of ordinary skill in the art would have been motivated to combine the teaching of Tsunetsugu et al. with claim 3 of patent '529 because the package technique reduce size and simplifies the assembly process. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to assembly the coupler and polarizing beam splitter adjacent to each other to reduce space and simplify alignment, as taught by Tsunetsugu et al., in claim 3 of patent '529.

Regarding claims 2-3, Tsunetsugu et al. teaches in FIG. 5, FIG. 6, FIG. 7 and FIG. 13 to keep optical elements in contact and attach elements together.

Regarding claims 9-11, Tsunetsugu et al. teaches in FIG. 5, FIG. 6, FIG. 7 and FIG. 13 to keep optical elements in contact and attach elements together. It is well known to the art that elements can be bonded together as subassembly to mechanically secure their relative positions.

9. Claims 1-5, 8-11 and 13 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 7 and 17 of U.S. Patent No. 6,548,801 in view of Tsunetsugu et al. (H. Tsunetsugu et al., "A Packaging Technique for an Optical 90°- Hybrid Balanced Receiver Using a Planar Lightwave Circuit", IEEE Transactions on Component, Packaging, and Manufacturing Technology – Part B, Vol. 19, No. 3, August 1996).

Claim 1 of patent '801 includes optical coupler for combining first signal and local oscillator, polarizing beam splitter, four of photodetectors. The difference between claim 1 of patent '801 and claims 1 and 5 of the instant application is that claim 1 of patent '801 does not require the polarizing beam splitter to be directly adjacent to the coupler. Tsunetsugu et al. teaches in FIG. 5 a package technique to assemble a receiver module by putting optical elements adjacent to each other without using fibers in between. One of ordinary skill in the art would have been motivated to combine the teaching of Tsunetsugu et al. with claim 1 of patent '801 because the package technique reduce size and simplifies the assembly process. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to assembly the coupler and polarizing beam splitter adjacent to each other to reduce space and simplify alignment, as taught by Tsunetsugu et al., in claim 1 of patent '801.

Regarding claims 2-3, Tsunetsugu et al. teaches in FIG. 5, FIG. 6, FIG. 7 and FIG. 13 to keep optical elements in contact and attach elements together.

Regarding claim 4, claim 7 of patent '801 includes the limitation of walk-off crystal.

Claim 17 of patent '801 includes combining first signal and swept local oscillator into first beam and second beam, splitting first beam into first and second polarization states, splitting second beam into first and second polarization states, converting optical signal of the four split beams into electrical signal. The difference between claim 17 of patent '801 and claims 18 and 13 of the instant application is that claim 17 of patent '801 does not require the polarizing beam splitter to be directly adjacent to the coupler. Tsunetsugu et al. teaches in FIG. 5 a package technique to assemble a receiver module by putting optical elements adjacent to each other without using fibers in between. One of ordinary skill in the art would have been motivated to combine the teaching of Tsunetsugu et al. with claim 17 of patent '801 because the package technique reduce size and simplifies the assembly process. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to assemble the coupler and polarizing beam splitter adjacent to each other to reduce space and simplify alignment, as taught by Tsunetsugu et al., in claim 17 of patent '801.

Regarding claims 9-11, Tsunetsugu et al. teaches in FIG. 5, FIG. 6, FIG. 7 and FIG. 13 to keep optical elements in contact and attach elements together. It is well known to the art that elements can be bonded together as subassembly to mechanically secure their relative positions.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1-3 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsunetsugu et al. (H. Tsunetsugu et al., "A Packaging Technique for an Optical 90°-Hybrid Balanced Receiver Using a Planar Lightwave Circuit", IEEE Transactions on Component, Packaging, and Manufacturing Technology – Part B, Vol. 19, No. 3, August 1996).

Regarding claims 1 and 5, Tsunetsugu et al. discloses in FIG. 1 a receiver module comprising a planar waveguide optical coupler for combining optical signal and local oscillator power, two polarizing beam splitters (PBS) directly adjacent to the planar waveguide optical coupler, each of which splits the combined signal into two polarized portions, and four photoreceivers that are coupled to the output of the PBS and generate electrical signals in response to respective polarized portion.

Regarding claim 2, the PBS splitters are in contact with first output of the planar waveguide optical coupler as illustrated in FIG. 2.

Regarding claim 3, the PBS is attached to the planar waveguide optical coupler as illustrated in FIG. 2.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 1-5, 8-13, 17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sorin et al. (U.S. Patent 6,259,529 B1) in view of Tsunetsugu et al. (H. Tsunetsugu et al., "A Packaging Technique for an Optical 90°-Hybrid Balanced Receiver Using a Planar Lightwave

Circuit", IEEE Transactions on Component, Packaging, and Manufacturing Technology – Part B, Vol. 19, No. 3, August 1996).

Regarding claims 1 and 5, Sorin et al. discloses in FIG. 7 a heterodyne detection system comprising optical combining unit 710 for combining an input signal and a local oscillator signal and splitting the combined signal into four portions, and four photodetectors 712 for generating electrical signals in response to the four portions. Sorin et al. further discloses in FIG. 8 the structure of combining unit 710. It includes a planar waveguide coupler and polarizing beam splitter. The difference between Sorin et al. and the claimed invention is that Sorin et al. does not teach to put the planar waveguide coupler and the polarizing beam splitter adjacent to each other. Instead, Sorin et al. teaches to use fiber 818 and 828 to couple the two devices.

Tsunetsugu et al. teaches in FIG. 5 a package technique to assemble a receiver module by putting optical elements adjacent to each other without using fibers in between. One of ordinary skill in the art would have been motivated to combine the teaching of Tsunetsugu et al. with the heterodyne detection system of Sorin et al. because the package technique reduce size and simplifies the assembly process. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to assembly the coupler and polarizing beam splitter adjacent to each other to reduce space and simplify alignment, as taught by Tsunetsugu et al., in the heterodyne detection system of Sorin et al.

Regarding claims 2-3, Tsunetsugu et al. teaches in FIG. 5, FIG. 6, FIG. 7 and FIG. 13 to keep optical elements in contact and attach elements together.

Regarding claim 4, Sorin et al. teaches in col. 7, line 23 to use walk-off crystal.

Regarding claims 8 and 13, Sorin et al. teaches in col. 6, lines 1-3 to use tunable laser as swept local oscillator.

Regarding claims 9-11, Tsunetsugu et al. teaches in FIG. 5, FIG. 6, FIG. 7 and FIG. 13 to keep optical elements in contact and attach elements together. It is well known to the art that elements can be bonded together as subassembly to mechanically secure their relative positions.

Regarding claim 12, Sorin et al. teaches in col. 7, line 23 to use walk-off crystal.

Regarding claims 16, FIG. 1 of Tsunetsugu et al. includes lenses located between polarizing beam splitter and photoreceivers.

Regarding claim 19, Sorin teaches in FIG. 13 to include intensity noise reducer 1376 to attenuate noise.

14. Claims 6 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sorin et al. and Tsunetsugu et al. as applied to claims 1-5, 8-13, 17 and 19-20 above, and further in view of Shimonaka et al. (U.S. Patent 5,548,434).

Sorin et al. and Tsunetsugu et al. have been discussed above in regard to claims 1-5, 8-13, 17 and 19-20. Sorin et al. teaches in FIG. 7 to include processor 716. The difference between Sorin et al. and Tsunetsugu et al. and the claimed invention is that Sorin et al. and Tsunetsugu et al. do not teach to monitor a beat signal. Shimonaka et al. teaches in FIG. 4 a coherent receiver where the electrical signal from the O/E converter is received by a beat signal detection circuit 43. The beat signal controls a wavelength tuning circuit 45 for the local oscillator 30. One of ordinary skill in the art would have been motivated to combine the teaching of Shimonaka et al. with the modified heterodyne detection system because the beat signal adjusts the local oscillator such that the wavelength tracks the input signal for optimal detection. Thus it would have been

obvious to one of ordinary skill in the art at the time the invention was made to use the processor to monitor beat signal and use the beat signal to control wavelength of local oscillator, as taught by Shimonaka et al., in the modified heterodyne detection system because the beat signal adjusts the local oscillator such that the wavelength tracks the input signal for optimal detection.

Regarding claim 20, Shimonaka et al. teaches in FIG. 4 to include filter 28 to block unwanted light. Tunable filter is well known in the art and would be used so that the spectrum analyzer/heterodyne receiver can be used for various wavelengths.

15. Claims 8-10, 13 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsunetsugu et al. (H. Tsunetsugu et al., "A Packaging Technique for an Optical 90°-Hybrid Balanced Receiver Using a Planar Lightwave Circuit", IEEE Transactions on Component, Packaging, and Manufacturing Technology – Part B, Vol. 19, No. 3, August 1996) in view of Yoshida et al. (S. Yoshida et al., "High Resolution Optical Spectrum Analysis by Coherent Detection with Multi-Electrode DBR-LD's as Local Oscillators", IEEE 1994).

Tsunetsugu et al. has been discussed above in regard to claims 1-3 and 5. Regarding claims 8 and 13, the difference between Tsunetsugu et al. and the claimed invention is that Tsunetsugu et al. does not use the receiver module for spectrum analysis. Yoshida et al. teaches a spectrum analyzer based on coherent detection (see p. 230, left col., last paragraph). As illustrated in FIG. 1, a spectrum analyzer can be obtained by replacing a local oscillator of a coherent detector with a tunable optical oscillator and scanning (i.e., sweeping) the tunable optical oscillator (see p. 230, right col., first paragraph). One of ordinary skill in the art would have been motivated to combine the teaching of Yoshida et al. with the receiver module of Tsunetsugu et al. because the approach of Yoshida et al. provides high frequency resolution and

requires no image signal rejection circuit. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the receiver module of Tsunetsugu et al. to a spectrum analyzer by replacing the local oscillator with a swept local oscillator, as taught by Yoshida et al., because such a spectrum analyzer provides high frequency resolution and requires no image signal rejection circuit.

Regarding claims 9-10, Tsunetsugu et al. teaches in FIG. 5, FIG. 6, FIG. 7 and FIG. 13 to keep optical elements in contact and attach elements together.

Regarding claim 16, FIG. 1 of Tsunetsugu et al. includes lenses located between polarizing beam splitter and photoreceivers.

Regarding claim 17, Yoshida et al. teaches in p. 231, left col. to use tunable laser for generating swept oscillator signal

16. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsunetsugu et al. and Yoshida et al. as applied to claims 8-10, 13 and 16-17 above, and further in view of Wyeth et al. (U.S. Patent 4,817,101).

Tsunetsugu et al. and Yoshida et al. have been discussed above in regard to claims 8-10, 13 and 16-17. The difference between Tsunetsugu et al. and Yoshida et al. and the claimed invention is that Tsunetsugu et al. and Yoshida et al. do not teach a processor for receiving the electrical signal and monitoring beat signal. Wyeth et al. teaches in FIG. 18 to use a spectrum analyzer and controller (computer) to receive the electrical signal and monitor beat signal (f1-f2). One of ordinary skill in the art would have been motivated to combine the teaching of Wyeth et al. and the modified spectrum analyzer of Tsunetsugu et al. and Yoshida et al. because the beat signal can be used to determine the characteristics of the signal under test and to control the

sweeping range and speed of the tunable laser. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a processor to receive the electrical signal and monitor beat signal, as taught by Wyeth et al., in the modified spectrum analyzer of Tsunetsugu et al. and Yoshida et al. because the beat signal can be used to determine the characteristics of the signal under test and to control the sweeping range and speed of the tunable laser.

17. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sorin et al. and Tsunetsugu et al. as applied to claims 1-5, 8-13, 17 and 19-20 above, and further in view of Araki et al. (U.S. Patent 6,640,042 B2).

Sorin et al. and Tsunetsugu et al. have been discussed above in regard to claims 1-5, 8-13, 17 and 19-20. The difference between Sorin et al. and Tsunetsugu et al. and the claimed invention is that Sorin et al. and Tsunetsugu et al. do not teach a fiber holder. Araki et al. teaches in FIG. 19 a fiber holder. One of ordinary skill would have been motivated to combine the teaching of Araki et al. with the modified heterodyne detection system of Sorin et al. and Tsunetsugu et al. because the fiber holder of Araki et al. secures a number of fibers at predetermined intervals while maintaining high density (see col. 2, lines 64-65). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a fiber holder, as taught by Araki et al., in the modified heterodyne detection system of Sorin et al. and Tsunetsugu et al. because the fiber holder of Araki et al. secures a number of fibers at predetermined intervals while maintaining high density.

Allowable Subject Matter

18. Claims 7 and 18 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 703 305-4341. The examiner can normally be reached on Monday-Friday (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 703 305-4729. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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leslie Pascal
LESLIE PASCAL
PRIMARY EXAMINER